

539,514

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
8 July 2004 (08.07.2004)

PCT

(10) International Publication Number  
**WO 2004/056937 A1**

(51) International Patent Classification<sup>7</sup>: **C09K 11/06**,  
H05B 33/08

(GB). HEUN, Susane [DE/DE]; Industriepark Höchst, F 821, 65926 Frankfurt am Main (DE). STOESSEL, Philipp [DE/DE]; Industriepark Höchst, F 821, 65926 Frankfurt am Main (DE). GERHARD, Anja [DE/DE]; Industriepark Höchst, F 821, 65926 Frankfurt am Main (DE).

(21) International Application Number:  
PCT/GB2003/005523

(22) International Filing Date:  
18 December 2003 (18.12.2003)

(74) Agents: PARLETT, Peter, Michael et al.; Avecia Limited, Intellectual Property Group, P.O. Box 42, Hexagon House, Blackley, Manchester M9 8ZS (GB).

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
0229659.8 20 December 2002 (20.12.2002) GB

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(71) Applicants (*for all designated States except US*): AVECIA LIMITED [GB/GB]; Hexagon House, Blackley, Manchester M9 8ZS (GB). COVION ORGANIC SEMICONDUCTORS GMBH [DE/DE]; Industriepark Höchst, F 821, 65926 Frankfurt am Main (DE).

(84) Designated States (*regional*): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(72) Inventors; and

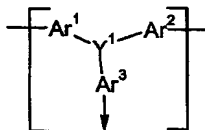
(75) Inventors/Applicants (*for US only*): BECKER, Heinrich [DE/DE]; Industriepark Höchst, F 821, 65926 Frankfurt am Main (DE). VESTWEBER, Horst [DE/DE]; Industriepark Höchst, F 821, 65926 Frankfurt am Main (DE). VERES, Janos [HU/GB]; P.O. Box 42, Hexagon House, Blackley, Manchester M9 8ZS (GB). STEIGER, Juergen [DE/DE]; Industriepark Höchst, F 821, 65926 Frankfurt am Main (DE). OGIER, Simon, Dominic [GB/GB]; P.O. Box 42, Hexagon House, Blackley, Manchester M9 8ZS

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: ELECTRONIC DEVICES



(I)

(57) Abstract: An electroluminescent device having an anode and a cathode, one of which is transparent, and one or more organic layers between said anode and said cathode, at least one of said organic layers comprising an organic electroluminescent material, wherein at least one of said organic layers comprises a polymeric material having repeat units of Formula (1): wherein: Y<sup>1</sup> represents, independently if in different repeat units, N, P, S, As and/or Se, preferably N; Ar<sup>1</sup> and Ar<sup>2</sup> are aromatic groups and Ar<sup>3</sup> is present only if Y<sup>1</sup> is N, P, or As in which case it too is an aromatic group; wherein Ar<sup>1</sup> and Ar<sup>2</sup> are the same or different and represent, independently if in different repeat units, a multivalent (preferably bivalent) aromatic group (preferably mononuclear but optionally polynuclear) optionally substituted by at least one optionally substituted C<sub>1-40</sub> carbyl-derived groups and/or at least one other optional substituent; and Ar<sup>3</sup> represents, independently if in different repeat units, a mono or multivalent (preferably bivalent) aromatic group (preferably mononuclear but optionally polynuclear) optionally substituted by at least one optionally substituted C<sub>1-40</sub> carbyl-derived group and/or at least one other optional substituent, and wherein the average number, m, of said repeat units in the polymer is at least (35).

WO 2004/056937 A1